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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------|
| 10/046,967 | 01/14/2002 | Heikki Heikkila | 15201 | 5425 |
| 7590 10/29/2003 SCULLY, SCOTT, MURPHY & PRESSER 400 Garden City Plaza Garden City, NY 11530 | | | EXAMINER FORTUNA, JOSE A | |
| | | | ART UNIT | PAPER NUMBER |

1731

DATE MAILED: 10/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,967

Applicant(s)

HEIKKILA ET AL.

Examiner

José A Fortuna

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 42902 . 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 7-18, 22-24 and 26-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ampulski, US Patent No. 4,734,162.

Ampulski teaches a process of making pulp in which a papermaking pulp, neutral to alkaline, is first cooked, digested with a solution containing SO₂ and NH₃ and then said cooked pulp is hydrolyzed by impregnating it with an acid, see abstract and column 3, line 46 through column 8, line 24. Ampulski teaches also the temperature and acidification time of the hydrolyzing steps of claims 7-18, which fall within the claimed range, see column 7, lines 25-32 and teaches the separation of the pulp and the hydrolyzed xylan and hemicellulose byproducts as claimed in claims 23-24 and 26, see column 8, lines 17-24 and column 8, line 65 through column 9, line 5. Ampulski teaches the use of birch as one of the preferred hardwood of claim 22, see column 3, lines 36-41. Regarding Claim 27, Ampulski teaches also that the pulp can be used with other pulps to form a paper product, see example 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 2-6 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ampulski, cited above.

Ampulski fails to teach the different parameters claimed in the above claims, i.e., viscosity of the pulp and xylose yield of claims 2-3; the use of formic acid and acid content of claims 4-6; the bleaching of the pulp before the acid treatment of claims 19-20. However, regarding claims 2-3, maintaining result effective variables to desired levels would have been

obvious to an ordinary skill in the art as a simple optimization process. Regarding claims 4-6, Ampulski teaches the acid treatment of the pulp with acids that are functional equivalent to formic acid and it has been held that, “[W]here two equivalents are interchangeable for their desired function, substitution would have been obvious and thus, express suggestion of desirability of the substitution of one for the other is unnecessary.” *In re Fout* 675 F. 2d 297, 213 USPQ 532 (CCPA 1982); *In re Siebentritt*, 372 F.2d 566, 152 USPQ 618 (CCPA 1967). Regarding the bleaching of the pulp before the acid treatment this step(s) would have been obvious to one of ordinary skill in the art, since the conversion of xylan would not be affected by such step and therefore, the bleaching of the pulp before and or after the hydrolysis is inconsequential to the hydrolysis step, absent a showing of unexpected results. Note that Ampulski suggest conventional steps, such as washing, screening, bleaching of the pulp after the hydrolyzing steps, see column 8, lines 18-24 and examples.

7. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hyatt et al., WO 98/56958 in view of Ampulski, cited above.

Hyatt et al. teach a process for recovering xylose from hardwood pulp in which an alkaline or neutral pulp is digested/cooked and the xylan contained in the pulp is hydrolyzed to xylose, see abstract. Hyatt et al. fail to teach the hydrolysis of the xylan directly on the pulp. However, Ampulski teaches that pulps can be hydrolyzed to obtain xylose, see above. Hydrolyzing the xylan contained in the pulp, either in the pulp or from the pulp filtrated is just a matter of convenience and not a technical deterrence. A combination of reference teachings may be obvious in the technological sense even

though business or economic considerations would previously have counseled against such a combination. *In re Farenkopf*, 713 F2d 714; 219 USPQ 1.

8. Claims 28-30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ampulski or Hyatt et al., cited above.

9. Claims 28-30 are product by process claims and Ampulski and Hyatt et al. teach products similar or the same than the claimed products. In the event any differences can be shown for the product -by-process claims 28-30, as opposed to the product taught by the references, Ampulski and Hyatt et al., such differences would have been obvious to one of ordinary skill in the art as routine modification of the product in the absence of a showing unexpected results, see *In re Thorpe*, 227 USPQ 964 (CAFC 1985).

As the afore mentioned claims are product by process claims, it is deemed that "[A]ny difference imparted by the product by process claims would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicants to establish that their product is patentably distinct, ..." *In re Brown*, 173 U.S.P.Q. 685, and *In re Fessmann*, 180 U.S.P.Q. 324.

Further, "[P]rocess limitations are significant only to the extent that they distinguish the claimed product over the prior art product." *In re Luck*, 177 U.S.P.Q. 523 (1973)

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure in the art of "Recovering Xylose from papermaking pulps."


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to José A Fortuna whose telephone number is 703-305-7498. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P. Griffin can be reached on 703-308-1164. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0662.


José A Fortuna
Primary Examiner
Art Unit 1731

JAF